

Motor Vehicle Prioritizing Interventions and Cost Calculator for States (MV PICCS): A Tool to Help States Reduce Motor Vehicle Injuries and Deaths



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Motor Vehicle Crash Health Burden

- ❑ **A leading cause of death in the US**
 - 33,561 deaths in 2012
 - ~90 deaths a day
- ❑ **More than 2.5 million emergency department (ED) visits for crash injuries in 2012**
 - ~7,000 people every day
- ❑ **Nearly 200,000 were then hospitalized in 2012**
 - 1 million days in the hospital each year



THE FULL IMPACT OF MOTOR VEHICLE CRASHES

For every 1 person killed in a motor vehicle crash



8 people were hospitalized



100 people were treated and released from the ED



SOURCE: CDC WISQARS (Web-based Injury Statistics Query and Reporting System), 2012

Motor Vehicle Non-Fatal Crash Costs

- ❑ **\$18 billion in lifetime medical costs**
 - More than 75% of costs occur during the first 18 months
 - ED visit costs ~\$3,300 per injured person
 - Hospitalization ~\$57,000 per injured person

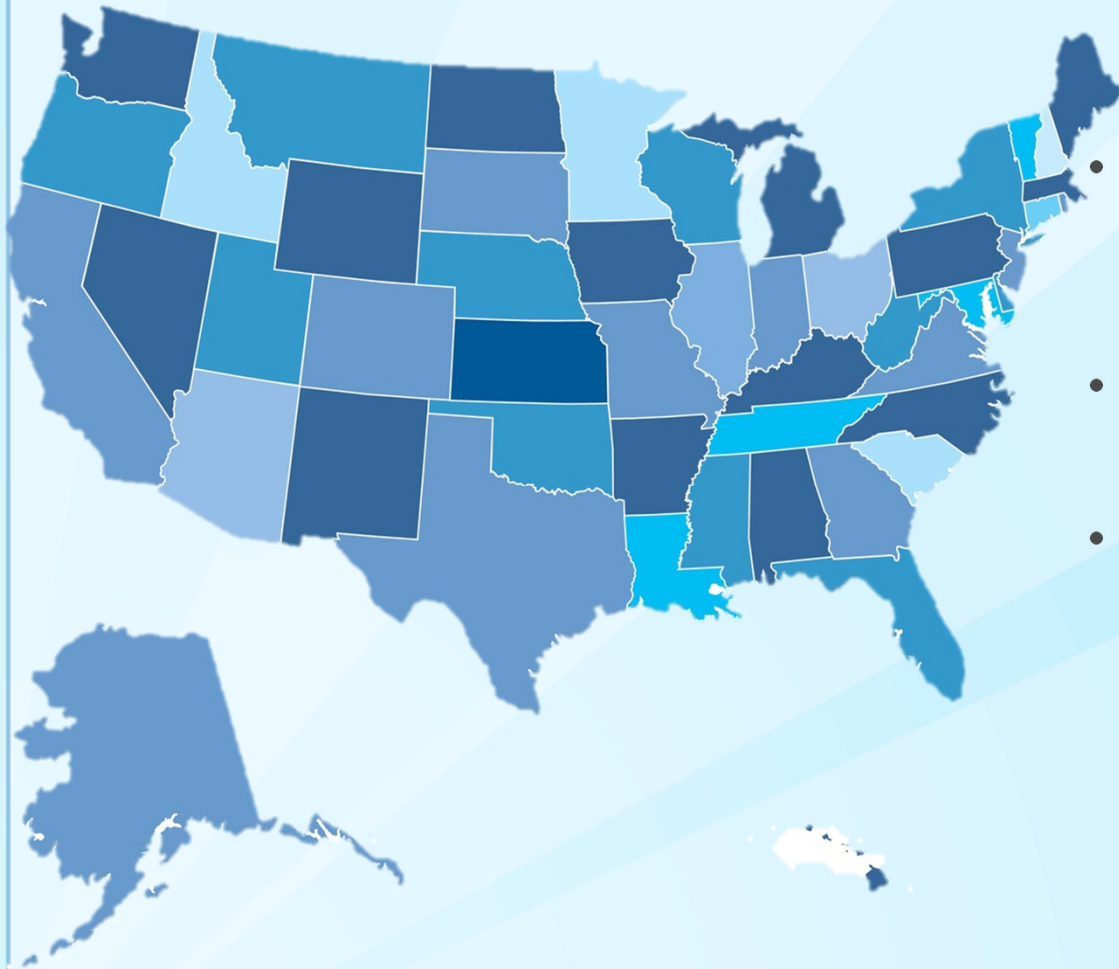
- ❑ **\$33 billion in lifetime work lost costs**



Motor Vehicle Injuries are a Significant Public Health Problem and CDC Winnable Battle

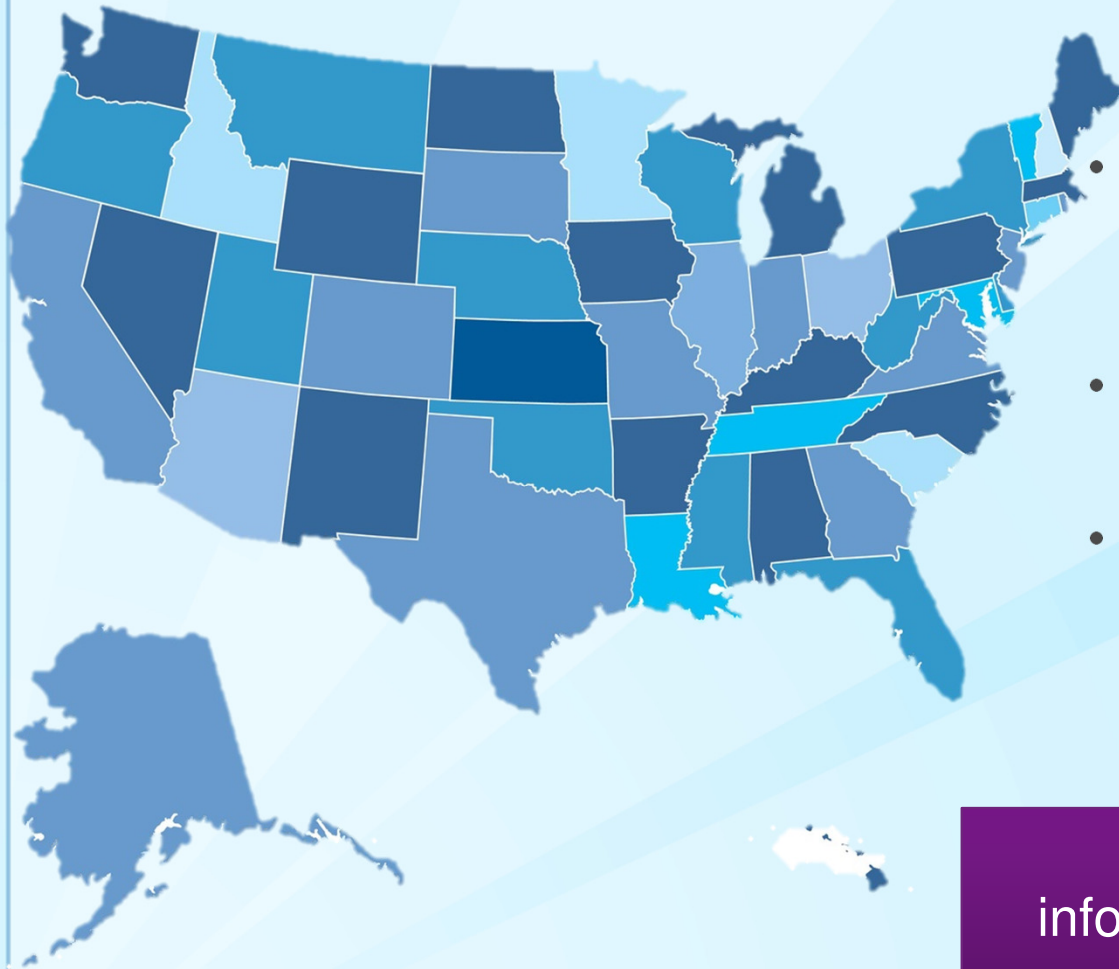
Fortunately, a wide range of evidence-based interventions are available

States Must Choose Among Many Options



- Many interventions are implemented at state level
- States must prioritize options
- To prioritize, states need information about the costs and benefits of each option

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MV PICCS provides this information to states in a user-friendly way

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TOOL DEVELOPMENT

Defined Appropriate Interventions

- ❑ **Helps state decision makers prioritize and select from a suite of 12 evidence-based interventions**
- ❑ **Selected interventions based on**
 - Type
 - Effectiveness
 - State role in implementation
 - Current use

MV PICCS Includes 12 Evidence-based Interventions



- Red light camera automated enforcement
- Speed camera automated enforcement
- Sobriety checkpoints
- Saturation patrols

MV PICCS Includes 12 Evidence-based Interventions



- **Bicycle helmet laws for children**
- **Motorcycle helmet use laws**
- **High-visibility enforcement for seat belts and child restraint/booster laws**
- **Primary enforcement seat belt use laws**

MV PICCS Includes 12 Evidence-based Interventions

- **Vehicle impoundment**
- **License plate impoundment**
- **Limits on diversion and plea agreements**
- **Alcohol interlocks**



Gathered Cost and Benefit Information and Created Estimates

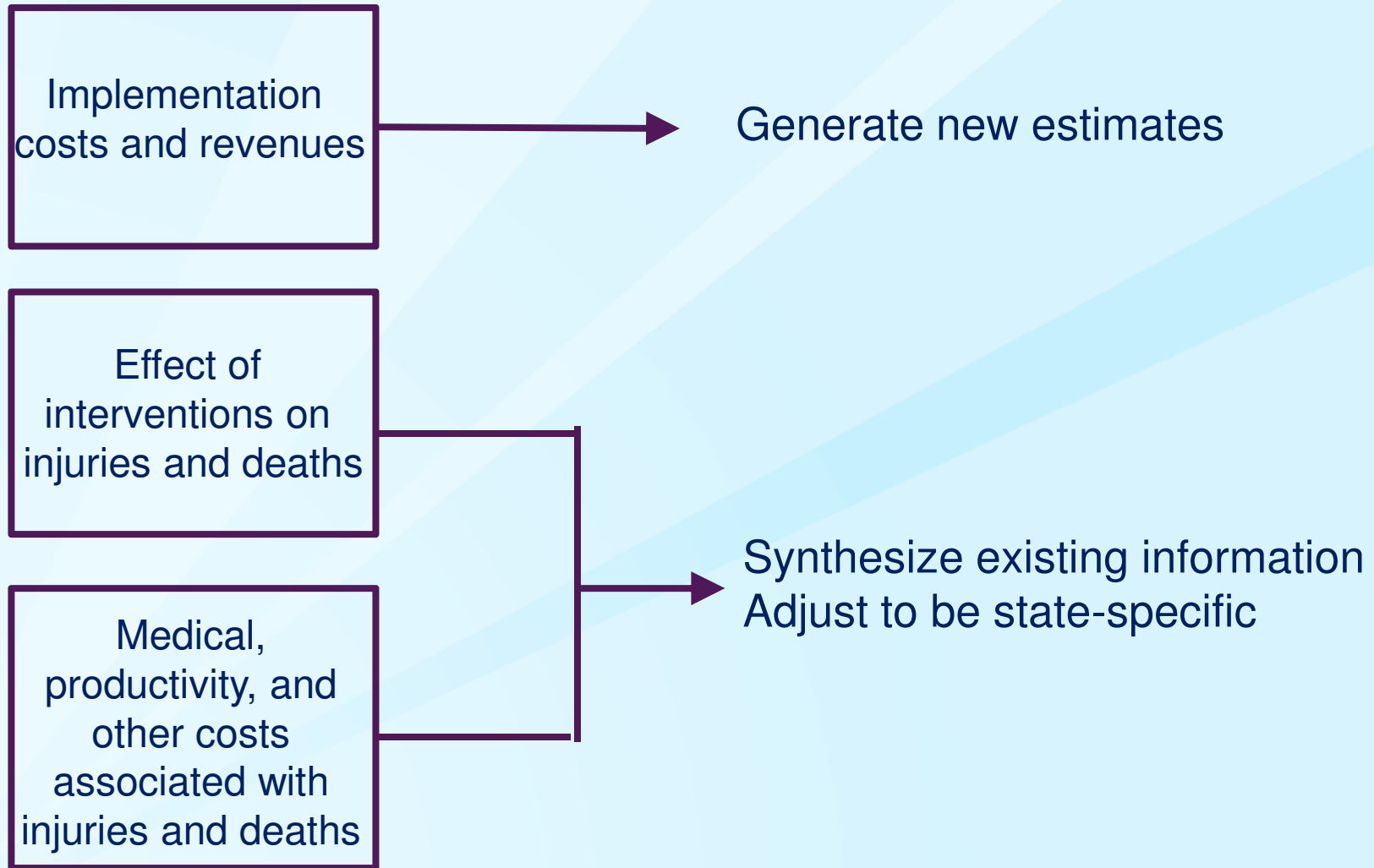
❑ **Calculates the expected:**

- Costs: Monetary costs of implementation as well as costs paid by individuals to states
- Benefits: Number of injuries prevented and lives saved
- Benefits: Monetized value of injuries prevented and lives saved

❑ **Data sources:**

- Costs: Published articles and reports, interviews with state officials and safety experts
- Benefits: peer-reviewed articles and reports that use reduction in deaths as the basis for evaluating effectiveness

MV PICCS Uses a Combination of New and Existing Estimates



MV PICCS Provides Two Types of Analysis for States

Basic Cost Effectiveness Analysis

- Prioritized list of interventions based on individual cost-effectiveness ratios

Portfolio Analysis

- Optimized set of interventions that accounts for non-additive effects of related interventions

<http://www.cdc.gov/motorvehiclesafety/calculator/>

MV PICCS DEMONSTRATION

CONCLUSION

Preventing injuries saves money

Crash injuries have gone down in recent years. There were almost 400,000 fewer ED visits and about 5,700 fewer hospitalizations in 2012 compared to 2002. This equals \$1.7 billion in avoided medical costs and \$2.3 billion in avoided work loss costs.

SOURCE: CDC Vital Signs, Morbidity and Mortality Weekly Report (MMWR) Oct. 2014

More Can Be Done to Prevent Motor Vehicle Injuries and Deaths

□ Resources

- CDC's MV PICCS
 - <http://www.cdc.gov/motorvehiclesafety/calculator/>
- CDC's Prevention Status Report
 - <http://www.cdc.gov/psr/>
- The Community Guide
 - <http://www.thecommunityguide.org/mvoi/index.html>
- NHTSA's Countermeasures that Work
 - <http://www.nhtsa.gov/staticfiles/nti/pdf/811727.pdf>

□ Future developments

- Currently adding 2 new interventions
- Final report and analyses to be published in December at www.rand.org

Thank you

For more information please contact Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA 30333

Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348

E-mail: cdcinfo@cdc.gov Web: <http://www.cdc.gov>

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

National Center for Injury Prevention and Control





Welcome to the Motor Vehicle PICCS (Prioritizing Interventions and Cost Calculator for States). The Motor Vehicle PICCS is a web tool that helps you review the costs and benefits of different statewide interventions designed to prevent motor vehicle-related injuries and deaths. The Motor Vehicle PICCS selects the most cost-effective combination of interventions for implementation under a given budget and user identified parameters. Currently, twelve effective interventions are available for you to select.

Candidate Intervention	Currently Implemented ¹	Intervention Name	Benefit \$/year ²	Cost \$/year ³	Selected by Model
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Speed Camera	120,541,000	-72,338,000	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red Light Camera	91,901,000	-5,781,000	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Alcohol Interlocks	52,535,000	123,000	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Motorcycle Helmet	393,994,000	2,900,000	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Primary Enforcement Seat Belt Law	252,192,000	6,388,000	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bicycle Helmet	9,360,000	556,000	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Vehicle Impoundment	66,545,000	4,400,000	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Limits on Diversion	24,079,000	21,931,000	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	License Plate Impound	59,102,000	-6,003,000	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Seat Belt Enforcement Campaign	194,548,000	2,688,000	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sobriety Checkpoints	117,158,000	8,143,000	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Saturation Patrols	162,385,000	14,605,000	<input type="checkbox"/>

Summary Results of the Interventions Chosen

Category	Value	Units
Total Cost	-41,822,000	\$ per year
Total Benefit	983,833,000	\$ per year
Total # of Fatalities Reduced	226	units
Total # of Injuries Reduced	26,932	units

- Available online at: <http://www.cdc.gov/motorvehiclesafety/calculator>



Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People.™

Welcome to the Motor Vehicle PICCS (Prioritizing Interventions and Cost Calculator for States). The Motor Vehicle PICCS is a web tool that helps you review the costs and benefits of different statewide interventions designed to prevent motor vehicle-related injuries and deaths. The Motor Vehicle PICCS selects the most cost-effective combination of interventions for implementation under a given budget and user identified parameters. Currently, twelve effective interventions are available for you to select.

Let's start by indicating the state you are interested in. You can change your selection at any time.

Select a state:

Then please select one of the following options:

- ☐ *Introduction - provides a quick review of what the motor vehicle PICCS offers and how to use the calculator.*
- ☐ *Basic Cost-Effectiveness Analysis - allows you to conduct a traditional cost effectiveness analysis that does not consider interdependencies that exist among some interventions.*
- ☐ *Portfolio Analysis - builds on the basic cost effectiveness analysis by accounting for interdependencies that exist among some interventions (e.g., interventions that all target drunk driving).*
- ☐ *Library - includes a detailed user guide, fact sheets on each of the interventions, and information on input data, assumptions, and methodology.*

Ohio
Basic Cost-Effectiveness Analysis
(Interdependencies Ignored)

Candidate Intervention	Currently Implemented ¹	Cost-Effectiveness Ratio	Intervention Name	Benefit \$/year	Cost \$/year ²	Cumulative Cost \$/year	# of Fatalities Reduced	# of Injuries Reduced
<input checked="" type="checkbox"/>	<input type="checkbox"/>	-1.67	Speed Camera	120,541,000	-72,338,000	-72,338,000	35	2905
<input checked="" type="checkbox"/>	<input type="checkbox"/>	-15.9	Red Light Camera	91,901,000	-5,781,000	-78,119,000	26	2248
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-9.85	License Plate Impound	59,102,000	-6,003,000	-84,122,000	26	948
<input checked="" type="checkbox"/>	<input type="checkbox"/>	427.23	Alcohol Interlocks	52,535,000	123,000	-83,999,000	23	842
<input checked="" type="checkbox"/>	<input type="checkbox"/>	135.87	Motorcycle Helmet	393,994,000	2,900,000	-81,099,000	49	12997
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	72.37	Seat Belt Enforcement Campaign	194,548,000	2,688,000	-78,411,000	49	5125
<input checked="" type="checkbox"/>	<input type="checkbox"/>	42.91	Primary Enforcement Seat Belt Law	252,192,000	5,877,000	-72,534,000	63	6643
<input checked="" type="checkbox"/>	<input type="checkbox"/>	16.84	Bicycle Helmet	9,360,000	556,000	-71,978,000	2	283
<input checked="" type="checkbox"/>	<input type="checkbox"/>	15.12	Vehicle Impoundment	66,545,000	4,400,000	-67,578,000	29	1067
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	14.39	Sobriety Checkpoints	117,158,000	8,143,000	-59,435,000	33	2909
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	11.12	Saturation Patrols	162,385,000	14,605,000	-44,830,000	72	2603
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1.1	Limits on Diversion	24,079,000	21,931,000	-22,899,000	11	386

Summary Results of the Interventions Chosen

Category	Value	Units
Total Cost	-22,899,000	\$ per year
Total Benefit	1,544,340,000	\$ per year
Total # of Fatalities Reduced	418	units
Total # of Injuries Reduced	38,956	units

Annual implementation budget available: \$

- ☒ Make a Standard Run with Fines-Included Ohio
- ☐ Make a Standard Run with Fines-Excluded
- ☐ Repeat run with a different state:

Ohio
Basic Cost-Effectiveness Analysis
(Interdependencies Ignored)

Candidate Intervention	Currently Implemented ¹	Cost-Effectiveness Ratio	Intervention Name	Benefit \$/year	Cost \$/year ²	Cumulative Cost \$/year	# of Fatalities Reduced	# of Injuries Reduced
<input checked="" type="checkbox"/>	<input type="checkbox"/>	-1.67	Speed Camera	120,541,000	-72,338,000	-72,338,000	35	2905
<input checked="" type="checkbox"/>	<input type="checkbox"/>	-15.9	Red Light Camera	91,901,000	-5,781,000	-78,119,000	26	2248
<input checked="" type="checkbox"/>	<input type="checkbox"/>	427.23	Alcohol Interlocks	52,535,000	123,000	-77,996,000	23	842
<input checked="" type="checkbox"/>	<input type="checkbox"/>	135.87	Motorcycle Helmet	393,994,000	2,900,000	-75,096,000	49	12997
<input checked="" type="checkbox"/>	<input type="checkbox"/>	39.48	Primary Enforcement Seat Belt Law	252,192,000	6,388,000	-68,708,000	63	6643
<input checked="" type="checkbox"/>	<input type="checkbox"/>	16.84	Bicycle Helmet	9,360,000	556,000	-68,152,000	2	283
<input checked="" type="checkbox"/>	<input type="checkbox"/>	15.12	Vehicle Impoundment	66,545,000	4,400,000	-63,752,000	29	1067
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1.1	Limits on Diversion	24,079,000	21,931,000	-41,821,000	11	386
<input type="checkbox"/>	<input checked="" type="checkbox"/>	-9.85	License Plate Impound	59,102,000	-6,003,000	-41,821,000	26	948
<input type="checkbox"/>	<input checked="" type="checkbox"/>	72.37	Seat Belt Enforcement Campaign	194,548,000	2,688,000	-41,821,000	49	5125
<input type="checkbox"/>	<input checked="" type="checkbox"/>	14.39	Sobriety Checkpoints	117,158,000	8,143,000	-41,821,000	33	2909
<input type="checkbox"/>	<input checked="" type="checkbox"/>	11.12	Saturation Patrols	162,385,000	14,605,000	-41,821,000	72	2603

Summary Results of the Interventions Chosen

Category	Value	Units
Total Cost	-41,821,000	\$ per year
Total Benefit	1,011,147,000	\$ per year
Total # of Fatalities Reduced	238	units
Total # of Injuries Reduced	27,371	units

Annual implementation budget available: \$

☒ Make a Standard Run with Fines-Included Ohio

☐ Make a Standard Run with Fines-Excluded

☐ Repeat run with a different state:

Ohio
Basic Cost-Effectiveness Analysis
(Interdependencies Ignored)

Candidate Intervention	Currently Implemented ¹	Cost-Effectiveness Ratio	Intervention Name	Benefit \$/year	Cost \$/year ²	Cumulative Cost \$/year	# of Fatalities Reduced	# of Injuries Reduced
<input checked="" type="checkbox"/>	<input type="checkbox"/>	427.23	Alcohol Interlocks	52,535,000	123,000	123,000	23	842
<input checked="" type="checkbox"/>	<input type="checkbox"/>	127.58	Motorcycle Helmet	393,994,000	3,088,000	3,211,000	49	12997
<input checked="" type="checkbox"/>	<input type="checkbox"/>	23	Primary Enforcement Seat Belt Law	252,192,000	10,963,000	14,174,000	63	6643
<input checked="" type="checkbox"/>	<input type="checkbox"/>	16.84	Bicycle Helmet	9,360,000	556,000	14,730,000	2	283
<input checked="" type="checkbox"/>	<input type="checkbox"/>	4.32	Speed Camera	120,541,000	27,917,000	42,647,000	35	2905
<input checked="" type="checkbox"/>	<input type="checkbox"/>	4.07	Red Light Camera	91,901,000	22,567,000	65,214,000	26	2248
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2.84	Vehicle Impoundment	66,545,000	23,394,000	88,608,000	29	1067
<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.68	Limits on Diversion	24,079,000	35,329,000	123,937,000	11	386
<input type="checkbox"/>	<input checked="" type="checkbox"/>	116.5	License Plate Impound	59,102,000	507,000	123,937,000	26	948
<input type="checkbox"/>	<input checked="" type="checkbox"/>	53.76	Seat Belt Enforcement Campaign	194,548,000	3,619,000	123,937,000	49	5125
<input type="checkbox"/>	<input checked="" type="checkbox"/>	10.68	Sobriety Checkpoints	117,158,000	10,967,000	123,937,000	33	2909
<input type="checkbox"/>	<input checked="" type="checkbox"/>	7.13	Saturation Patrols	162,385,000	22,777,000	123,937,000	72	2603

Summary Results of the Interventions Chosen

Category	Value	Units
Total Cost	0	\$ per year
Total Benefit	0	\$ per year
Total # of Fatalities Reduced	0	units
Total # of Injuries Reduced	0	units

Annual implementation budget available: \$

- ☐ Make a Standard Run with Fines-Included Ohio
☒ Make a Standard Run with Fines-Excluded
☐ Repeat run with a different state:

Ohio
Basic Cost-Effectiveness Analysis
(Interdependencies Ignored)

Candidate Intervention	Currently Implemented ¹	Cost-Effectiveness Ratio	Intervention Name	Benefit \$/year	Cost \$/year ²	Cumulative Cost \$/year	# of Fatalities Reduced	# of Injuries Reduced
<input checked="" type="checkbox"/>	<input type="checkbox"/>	427.23	Alcohol Interlocks	52,535,000	123,000	123,000	23	842
<input checked="" type="checkbox"/>	<input type="checkbox"/>	16.84	Bicycle Helmet	9,360,000	556,000	679,000	2	283
<input checked="" type="checkbox"/>	<input type="checkbox"/>	127.58	Motorcycle Helmet	393,994,000	3,088,000	3,767,000	49	12997
<input checked="" type="checkbox"/>	<input type="checkbox"/>	23	Primary Enforcement Seat Belt Law	252,192,000	10,963,000	14,730,000	63	6643
<input checked="" type="checkbox"/>	<input type="checkbox"/>	4.32	Speed Camera	120,541,000	27,917,000	42,647,000	35	2905
<input checked="" type="checkbox"/>	<input type="checkbox"/>	4.07	Red Light Camera	91,901,000	22,567,000	65,214,000	26	2248
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2.84	Vehicle Impoundment	66,545,000	23,394,000	88,608,000	29	1067
<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.68	Limits on Diversion	24,079,000	35,329,000	123,937,000	11	386
<input type="checkbox"/>	<input checked="" type="checkbox"/>	116.5	License Plate Impound	59,102,000	507,000	123,937,000	26	948
<input type="checkbox"/>	<input checked="" type="checkbox"/>	53.76	Seat Belt Enforcement Campaign	194,548,000	3,619,000	123,937,000	49	5125
<input type="checkbox"/>	<input checked="" type="checkbox"/>	10.68	Sobriety Checkpoints	117,158,000	10,967,000	123,937,000	33	2909
<input type="checkbox"/>	<input checked="" type="checkbox"/>	7.13	Saturation Patrols	162,385,000	22,777,000	123,937,000	72	2603

Summary Results of the Interventions Chosen

Category	Value	Units
Total Cost	679,000	\$ per year
Total Benefit	61,895,000	\$ per year
Total # of Fatalities Reduced	25	units
Total # of Injuries Reduced	1,125	units

Annual implementation budget available: \$

- ☐ Make a Standard Run with Fines-Included Ohio
☒ Make a Standard Run with Fines-Excluded
☐ Repeat run with a different state:

**Ohio
Portfolio Analysis
(Interdependencies Incorporated)**

Candidate Intervention	Currently Implemented ¹	Intervention Name	Benefit \$/year ²	Cost \$/year ³
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Alcohol Interlocks	52,535,000	123,000
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sobriety Checkpoints	117,158,000	8,143,000
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bicycle Helmet	9,360,000	556,000
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Motorcycle Helmet	393,994,000	2,900,000
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red Light Camera	91,901,000	-5,781,000
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Speed Camera	120,541,000	-72,338,000
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Saturation Patrols	162,385,000	14,605,000
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Primary Enforcement Seat Belt Law	252,192,000	5,877,000
<input type="checkbox"/>	<input checked="" type="checkbox"/>	License Plate Impound	59,102,000	-6,003,000
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Limits on Diversion	24,079,000	21,931,000
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Seat Belt Enforcement Campaign	194,548,000	2,688,000
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Vehicle Impoundment	66,545,000	4,400,000

Annual implementation budget available: \$

**Ohio
Portfolio Analysis
(Interdependencies Incorporated)**

Candidate Intervention	Currently Implemented ¹	Intervention Name	Benefit \$/year ²	Cost \$/year ³	Selected by Model
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Speed Camera	120,541,000	-72,338,000	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red Light Camera	91,901,000	-5,781,000	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Alcohol Interlocks	52,535,000	123,000	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Motorcycle Helmet	393,994,000	2,900,000	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Primary Enforcement Seat Belt Law	252,192,000	6,388,000	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bicycle Helmet	9,360,000	556,000	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Vehicle Impoundment	66,545,000	4,400,000	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Limits on Diversion	24,079,000	21,931,000	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	License Plate Impound	59,102,000	-6,003,000	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Seat Belt Enforcement Campaign	194,548,000	2,688,000	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sobriety Checkpoints	117,158,000	8,143,000	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Saturation Patrols	162,385,000	14,605,000	<input type="checkbox"/>

Summary Results of the Interventions Chosen

Category	Value	Units
Total Cost	-41,822,000	\$ per year
Total Benefit	983,833,000	\$ per year
Total # of Fatalities Reduced	226	units
Total # of Injuries Reduced	26,932	units

Breakdown of Total Cost

Cost Component	Value	Units
Publicity	4,992,000	\$ per year
Police/Highway Patrol Time	23,187,000	\$ per year
Department of Motor Vehicles	52,000	\$ per year
Probation and Parole	24,257,000	\$ per year
Program Management	910,000	\$ per year
Equipment	36,372,000	\$ per year
Education Programs	-144,000	\$ per year
Fines and Fees	-164,708,000	\$ per year
Impoundment	23,271,000	\$ per year
Court System	9,990,000	\$ per year
Offender-Borne Cost ⁴	25,954,000	\$ per year
Cost to Comply with the Law ⁴	24,026,000	\$ per year

Annual implementation budget available: \$

☒ Make a Standard Run with Fines-Included Ohio

☐ Make an Standard Run with Fines-Excluded

☐ Run a sensitivity analysis

☐ Repeat run with a different state:

Item	Default Value	Valid Input Range ⁵	User Value
Injury to Fatality Ratio - Bike Helmet	<input type="text" value="171.55"/>	≥ 0	<input type="text"/>
Injury to Fatality Ratio - Motor	<input type="text" value="264.54"/>	≥ 0	<input type="text"/>
Injury to Fatality Ratio - Alcohol	<input type="text" value="36.18"/>	≥ 0	<input type="text"/>
Injury to Fatality Ratio - Passenger Vehicle	<input type="text" value="105.56"/>	≥ 0	<input type="text"/>
Injury to Fatality Ratio - All	<input type="text" value="106.54"/>	≥ 0	<input type="text"/>
Injury to Fatality Ratio - Speed	<input type="text" value="82.61"/>	≥ 0	<input type="text"/>
Injury to Fatality Ratio - Intersection	<input type="text" value="85.86"/>	≥ 0	<input type="text"/>
Injury Reduction - Sobriety Checkpoints	<input type="text" value="0.2"/>	0 to 1	<input type="text"/>
Injury Reduction - Bicycle Helmet	<input type="text" value="0.15"/>	0 to 1	<input type="text"/>
Injury Reduction - Motorcycle Helmet	<input type="text" value="0.289"/>	0 to 1	<input type="text"/>
Injury Reduction - Redlight Camera	<input type="text" value="0.17"/>	0 to 1	<input type="text"/>
Injury Reduction - Speed Camera	<input type="text" value="0.12"/>	0 to 1	<input type="text"/>
Injury Reduction - Alcohol Interlocks	<input type="text" value="0.24"/>	0 to 1	<input type="text"/>
Injury Reduction - Saturation Patrols	<input type="text" value="0.179"/>	0 to 1	<input type="text"/>
Injury Reduction - Primary Enforcement Seat Belt Law	<input type="text" value="0.07"/>	0 to 1	<input type="text"/>
Injury Reduction - License Plate	<input type="text" value="0.27"/>	0 to 1	<input type="text"/>
Injury Reduction - Limits on Diversion	<input type="text" value="0.11"/>	0 to 1	<input type="text"/>
Injury Reduction - Seat Belt Enforcement Campaign	<input type="text" value="0.054"/>	0 to 1	<input type="text"/>
Injury Reduction - Vehicle Impoundment	<input type="text" value="0.304"/>	0 to 1	<input type="text"/>
State-adjusted Cost per Fatality in \$	<input type="text" value="1343652"/>	≥ 0	<input type="text"/>
State-adjusted Cost per Injury in \$	<input type="text" value="25235.36"/>	≥ 0	<input type="text"/>

Fatality Reduction - Sobriety Checkpoints	0.081	0 to 1	
Fatality Reduction - Bicycle Helmet	0.15	0 to 1	
Fatality Reduction - Motorcycle Helmet	0.289	0 to 1	
Fatality Reduction - Redlight Camera	0.17	0 to 1	
Fatality Reduction - Speed Camera	0.12	0 to 1	
Fatality Reduction - Alcohol Interlocks	0.24	0 to 1	
Fatality Reduction - Saturation Patrols	0.179	0 to 1	
Fatality Reduction - Primary Enforcement Seat Belt Law	0.07	0 to 1	
Fatality Reduction - License Plate	0.27	0 to 1	
Fatality Reduction - Limits on Diversion	0.11	0 to 1	
Fatality Reduction - Seat Belt Enforcement Campaign	0.054	0 to 1	
Fatality Reduction - Vehicle Impoundment	0.304	0 to 1	
Implementation Cost in \$ - Red Light Camera	-5781153	Any	
Implementation Cost in \$ - Speed Camera	-72338060	Any	
Implementation Cost in \$ - Alcohol Interlocks	122968	Any	
Implementation Cost in \$ - Sobriety Checkpoints	8143459	Any	
Implementation Cost in \$ - Saturation Patrols	14604900	Any	
Implementation Cost in \$ - Bicycle Helmet	555850	Any	
Implementation Cost in \$ - Motorcycle Helmet	2899828	Any	
Implementation Cost in \$ - Seat Belt Enforcement Campaign	2688366	Any	
Implementation Cost in \$ - Primary Enforcement Seat Belt Law	6388226	Any	
Implementation Cost in \$ - License Plate	-6002537	Any	
Implementation Cost in \$ - Limits on Diversion	21930590	Any	
Implementation Cost in \$ - Vehicle Impoundment	4400133	Any	

**Ohio
Portfolio Analysis
(Interdependencies Incorporated)**

Candidate Intervention	Currently Implemented ¹	Intervention Name	Benefit \$/year ²	Cost \$/year ³	Selected by Model
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Alcohol Interlocks	52,535,000	123,000	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bicycle Helmet	9,360,000	556,000	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Motorcycle Helmet	393,994,000	2,900,000	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red Light Camera	91,901,000	-5,781,000	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Speed Camera	120,541,000	0	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sobriety Checkpoints	117,158,000	8,143,000	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Saturation Patrols	162,385,000	14,605,000	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Primary Enforcement Seat Belt Law	252,192,000	6,388,000	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	License Plate Impound	59,102,000	-6,003,000	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Limits on Diversion	24,079,000	21,931,000	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Seat Belt Enforcement Campaign	194,548,000	2,688,000	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Vehicle Impoundment	66,545,000	4,400,000	<input type="checkbox"/>

Summary Results of the Interventions Chosen

Category	Value	Units
Total Cost	-2,203,000	\$ per year
Total Benefit	668,331,000	\$ per year
Total # of Fatalities Reduced	135	units
Total # of Injuries Reduced	19,275	units

Breakdown of Total Cost

Cost Component	Value	Units
Publicity	4,992,000	\$ per year
Police/Highway Patrol Time	12,347,000	\$ per year
Department of Motor Vehicles	0	\$ per year
Probation and Parole	0	\$ per year
Program Management	541,000	\$ per year
Equipment	36,372,000	\$ per year
Education Programs	0	\$ per year
Fines and Fees	-128,792,000	\$ per year
Impoundment	0	\$ per year
Court System	0	\$ per year
Offender-Borne Cost ⁴	14,685,000	\$ per year
Cost to Comply with the Law ⁴	24,026,000	\$ per year

Annual implementation budget available: \$